

Application No.: 09/990,992

Docket No.: JCLA8137

Amendment**In The Claims:**

Claim 1. (Currently Amended) An apparatus to measure a heart rate variability (HRV), comprising:

a listening instrument to collect sound signals of a heart, wherein high frequency sounds and low frequency vibrations are transformed into electrical signals; and

a computing system to analyze the electrical signals of the sound signals of the heart, wherein the computing system comprises a digital signal processing unit to estimate a beat-to-beat interval of a heart beat from the electrical signals, to transform interval values into a frequency spectrum and to perform frequency-domain analysis, time-domain analysis and non-linear analysis to the electrical signals, and wherein frequency-domain parameters of the electrical signals are quantified to characterize the heart rate variability.

Claim 2. (Original) The apparatus of claim 1, wherein the listening instrument includes a microphone.

Claim 3. (Original) The apparatus of claim 1, wherein the listening instrument includes an instrument used in auscultation.

Claim 4. (Currently amended) The apparatus of claim 1, wherein the apparatus further comprises an amplifier, a filter and an analog-to-digital converter to process and digitize the electrical signals before the electrical signals are analyzed by the computing system.

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Claim 5. (Original) The apparatus of claim 1, wherein the computing system includes a personal computer, a personal digital assistant or a microchip.

Claims 6-7 (cancelled)

Claim 8. The apparatus of claim 16, wherein the frequency-domain parameters include high frequency (HF), low frequency (LF), total power (TP) and HF/LF.

Claims 9-16 (cancelled)

Claim 17. (New) A system for monitoring functions of an autonomic nervous system, comprising:

a microphone to collect sound signals of a heart, wherein the sound signals are transformed into electrical signals;

an amplifier to amplify the transformed electrical signals from the microphone;

a filter to filter the amplified electrical signals;

an analog-to-digital converter to digitize the filtered electrical signals before the electrical signals are analyzed by the computing system; and

a computing system to analyze the digitized electrical signals, wherein the computing system estimates beat-to-beat interval values based on the digitized electrical signals, transforms the interval values into a frequency spectrum and analyzing the frequency spectrum by quantifying components of a frequency distribution of a heart rate variability.

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a/ Claim 18. (New) The system of claim 17, wherein the computing system includes a portable computer, a personal digital assistant or a microchip.

Claim 19. (New) The system of claim 17, wherein the components of the frequency distribution of the heart rate variability include low frequency (LF), high frequency (HF), total power (TP) and LF/HF.
